

Manipulative Energy Activities

Louisiana Department of Natural Resources
Energy Division
P.O. Box 44156
Baton Rouge, LA 70804-4156
(504) 342-1399



This collection of 20 activities is preceded by 2-1/2 pages of introduction, energy conservation principles and an instructional philosophy. (48 pages; free; 1987.)

REPORT CARD

grades 4-6

Teaching and LearningB

Disciplines:

Presentation and
OrganizationB+

Math
Science

Energy ContentB-

Teaching and Learning: This teaching material is organized thematically. The activities do a fair job of encouraging hands-on experience. Assessment devices were lacking and learning is restricted to the classroom.

Presentation and Organization: These activities appeared easy to use and had fun illustrations. Teachers felt a need for more suggestions to extend the lessons.

Energy Content: "Manipulative Energy Activities" covers various energy sources, but does not treat energy flow or social effects of energy use in-depth.

Teachers' Thoughts: Teachers really liked the simple to use format and all the hands-on activities found here. Most of the comments were very favorable, everyone wanted

Energy, Food, and You

Washington State Office of Environmental Education
17011 Meridian North
Seattle, WA 98133
(206)365-3893



This is an interdisciplinary curriculum guide with food and nutrition-oriented energy education activities. Grades K-6 (\$15.00 each + \$3.00 shipping; 1992). Grades 7-12 (292 pages; \$12 each + \$3.00 shipping; 1983.)

REPORT CARD

grades K-6 & 7-12

Teaching and LearningB

Presentation and
OrganizationB

Energy ContentB

Disciplines:

Drama
Language Arts
Math
Music
Science
Social Studies
Spelling

Teaching and Learning: While the assessment devices are weak, the materials have good hands-on activities. Various learning styles are included. Both rural and urban students will find this material relevant. Personal decision-making is well-addressed.

Presentation and Organization: The illustrations are fair, and the objectives and goals of the teaching materials are clearly stated. The writing is engaging and student materials are provided.

Energy Content: The lessons cover the basics of energy very well and get students actively involved in energy conservation. Some energy sources and the relationship between renewable and nonrenewable energy are not extensively covered.

Teachers' Thoughts: There are a lot of activities here, and they're presented in a fashion that is not overwhelming. Teachers loved the Table of Contents that included the goals and disciplines addressed by the activity. Everyone liked this material, but wanted to see the illustrations redone. The food theme for teaching energy seems a great motivator for kids.

Connections

National Center for Appropriate Technology
c/o Publications
Box 4000
Butte, Montana 59702
(406) 494-4572



“Connections” is an assortment of energy activities teaching about appropriate technology. The activities illustrate the concepts of recycling, conservation, and renewable energy. Quizzes are provided for each lesson, and there is an entire section of handouts. (108 pages; \$7.00; 1980.)

REPORT CARD

grades 5-6

Teaching and LearningB

Disciplines:

Presentation and
OrganizationB

Art
Interdisciplinary
Math
Social Studies

Energy ContentB

Teaching and Learning: These materials do a good job of expanding the classroom and connecting information with real experiences. “Connections” includes some good student participation activities that teach about energy, society and technology. Assessment devices are fair.

Presentation and Organization: Fair illustrations and clear objectives make the materials easy to use. The activities were readily integrated into an established curriculum.

Energy Content: All the energy basics are covered, but not always in great depth.

Teachers' Thoughts: There are home activities included and the historical perspective was unique. Several teachers noted the small type as being a little difficult to read. Most felt that, with a bit of outside research, the materials were adaptable to varied classrooms and more grade levels than indicated. This material got very mixed comments.

Iowa Developed Energy Activity Sampler

Department of Education
Grimes State Office Building
Des Moines, Iowa 50319-0146
(515) 281-5294



This is a large collection of hands-on activities designed for use in Iowa. Background information, student handouts and worksheets are included for each set of activities. (750 pages; \$20, free to Iowa teachers with workshop; 1989.)

REPORT CARD

grades K-12

Teaching and LearningB

Presentation and
OrganizationB

Energy ContentB-

Disciplines:

Art
Interdisciplinary
Language Arts
Math
Science
Social Science
Science, Tech. & Society

Teaching and Learning: Assessment devices are lacking, but the hands-on activities treat energy information accurately and make strong connections to real-life experiences. The general content of the material is of good quality.

Presentation and Organization: The goals and objectives are clear, but the organization is not. Student materials are provided and they are easy to understand and use. The presentation is a bit dry.

Energy Content: There is information on various energy sources, and the relationship of energy to society and technology is explored. Basic energy content is also covered.

Teachers' Thoughts: There were very different reactions to the organization of these materials --- some liked it, while others felt it was cumbersome. Everyone agreed it was rather plain and unexciting in appearance. This is one of a few of the materials evaluated that include rural-specific energy activities and integrated disciplines.

The California Class Project

California Department of Education

Bureau of Publications, Sales Unit

P.O. Box 271

Sacramento, CA 95812-0271

(916) 445-1260 or

Toll free for credit card orders only (1-800) 995-4099

FAX: (916) 323-0823



This is a collection of environmental education activities with a 6 activity unit on energy. These materials were initially developed and piloted by the National Wildlife Federation. Only the energy section was evaluated.

(410 pages; \$28 + tax; 1990. Item # 9939.)

REPORT CARD

Teaching and Learning	B	grades 7-12	Disciplines:
Presentation and Organization	B+		Art
			Interdisciplinary
			Language Arts
			Math
			Science
Energy Content	B-		Social Science
			Science, Tech. & Society

Teaching and Learning: These materials are applicable in both urban and rural settings. The content is treated accurately but not always in depth. There is a need for assessment devices.

Presentation and Organization: The materials are very clear and easy to use but the illustrations are lacking a bit.

Energy Content: While not all energy concepts are covered, there is strong participation in energy conservation included. Energy data is not current, but can be easily updated. Call the California Energy Extension Service at (916) 323-4388 for new tables.

Teachers' Thoughts: Teachers liked how math (graphs and charts) was integrated with home life. Some felt that they would have to do a lot of background work to support the activities and several teachers lamented a lack of experiments. Each activity requires several class periods to complete.

Energenius Program

Local Pacific Gas and Electric Offices -or-
Pacific Gas and Electric
Energenius Program
PO Box 7265
San Francisco, CA 94120-9825



This set consists of posters, a calendar, a teacher's guide, a video (not evaluated), stickers, and student worksheets. These all support a lesson on how to save energy at school and at home. (Free from local PG&E offices, 1990.)

REPORT CARD

grades 2-5

Teaching and LearningB

Disciplines:

Interdisciplinary

Presentation and
OrganizationB+

Energy ContentC+

Teaching and Learning: The information is related in real life terms but does not go into great depth. There is not a strong use of the scientific thought process.

Presentation and Organization: The instructions for using this material were very clear and concise. Some teachers felt it could use some extensions.

Energy Content: This is designed to teach about gas and electricity only. The conservation elements were well related to the students' experience.

Teachers' Thoughts: There is lots of color in this packet but the hands- on activity is limited. There is a narrow focus on home conservation and for this reason teachers thought it should be supplemented with other information.

Let's Get Energized: Energy Education for After-School Enrichment

Check first with: PG&E, Ed. Services
77 Beale Street, Room 2825
San Francisco, CA 94106-9900
(415) 973-9017 -or-
CEES
1400 Tenth Street
Sacramento, CA 95814
(916) 323-4388



This is an assortment of energy activities taken from several sources by the El Dorado County Office of Ed. They are intended for use in after-school programs and not

REPORT CARD

grades K-6

Teaching and LearningB

Disciplines:

Interdisciplinary

Presentation and
OrganizationB

Energy ContentB-

Teaching and Learning: Hands-on experience and various learning modes are utilized. Energy information is not covered in depth. The activities are grade-level appropriate. There are poor assessment devices.

Presentation and Organization: Ideas presented are adaptable for varied learning situations. The organization is easy to understand and use. There is no natural progression from activity to activity.

Energy Content: There are some good activities for getting students directly involved in energy conservation, but the relation between renewable and nonrenewable energy is weak.

Teachers' Thoughts: This collection of quality activities is drawn from many different sources. The Table of Contents is organized (small group, large group, quiet activities, labs, etc.) in a unique and appreciated format. The main weakness was that there is no building on concepts for a comprehensive understanding of energy.

Hot Water and Warm Homes

Teacher's Guide
LHS Gems
Great Explorations in Math and Science
Lawrence Hall of Science
University of California
Berkeley, CA 94702
(510) 642-7771



This is a booklet full of activities that teach about using solar energy at home. The concept of controlled experimentation is emphasized in this unit. This is just one of the Lawrence Hall of Science's "GEMS" (Great Explorations in Math and Science), a series of activity books. (48 pages; \$10.00, plus shipping; 1986.)

REPORT CARD

grades 4-6

Teaching and LearningB

Disciplines:

Presentation and
OrganizationB

Math
Science

Energy Content C+

Teaching and Learning: There are lots of hands-on activities included. The scientific method is used and the concepts are related to student's experience. The assessment devices are weak.

Presentation and Organization: "Hot Water and Warm Homes" is well-organized and includes high quality student materials. The format is easy to use.

Energy Content: These materials are so focused that they don't cover a lot of basic energy information. Solar heat is covered in-depth.

Teachers' Thoughts: Teachers reacted very positively to these classroom-friendly activities. Everyone thought they could be easily incorporated into the classroom and would "generate a lot of exciting learning."

Offalot, Energy Choices and Challenges, Power Switch, Bright Land, Energy Crunch, Fossil Fuel Junction, and Energy in American History

Check with your local utility first -or-
Energy Source Education Council
5505 East Carson, Suite 250
Lakewood, CA 90713
(310) 420-6814



Each title represents a different grade-level-teaching package which includes; teacher's guide, student booklets, filmstrips, audio tapes and posters. (Tapes and filmstrips were not evaluated.) Each is packaged in a cardboard container, a preview copy can be requested. These vary in quality, but evaluated together here due to space limitations, grades are averages from all titles. Please look to the right for descriptions and grade level of individual titles. (Student booklets are 16-40 pages; free from some local utilities, 1988.)

REPORT CARD

grades K-12

Teaching and LearningB

Presentation and
OrganizationB

Energy ContentB-

Disciplines:

Language Arts
Math
Science
Social Studies

Teaching and Learning: All of the units performed well except Fossil Fuel Junction and Energy in American History. The learning environment was limited and hands-on activities were weak in these two units.

Presentation and Organization: Instructions are clear and the illustrations bright. Suggestions for further investigation and activity extensions were lacking.

Energy Content: All the energy basics are covered, just not in one unit. There is good depth of treatment and some student participation in energy conservation.

Teachers' Thoughts: These are very professional-looking materials that teach specific energy topics. For a complete unit on energy, these would be supplemental. *Offalot* and *Energy Choices and Challenges* were particularly popular, teachers feel they are well assembled lessons.

Each title is listed here in the order of how they ranked when evaluated. Included is reference to the appropriate grade level and disciplines. Sample pages from *Offalot* and *Energy Choices and Challenges* are on the following page.



OFFALOT, Grades Kindergarten, Interdisciplinary.

Offalot is a furry puppet who introduces children to energy use and safety. The unit consists of ten lessons, each about twenty minutes in length. Included are a puppet, teacher guide, student booklets, cassette tape, picture cards, story cards, poster, home activity booklets and badges.

ENERGY CHOICES AND CHALLENGES,

Grades 9-12, Science and Social Science

Social, technological, political, economic, and environmental issues are explored in this unit requiring twelve class periods. It uses discussion questions and activities to study current energy topics.



POWER SWITCH, Grades 5-6, Interdisciplinary.

The three major fuel eras are discussed and future energy sources are discussed. Lifestyles and energy use around the world are looked at in one chapter.



BRIGHTLAND, Grades 1-2, Interdisciplinary.

Basic energy concepts such as heat, light and motion, how energy gets to our homes, and conservation are introduced in this unit. Ten lessons each requiring about thirty minutes make up the unit.



ENERGY CRUNCH, Grades 7-9, Science.

This two to three week unit explores energy basics, supply and demand, conservation and energy sources from various positions. Students study research facts and make decisions on the pros and cons of energy issues.



FOSSIL FUEL JUNCTION, Grades 3-4, Interdisciplinary.

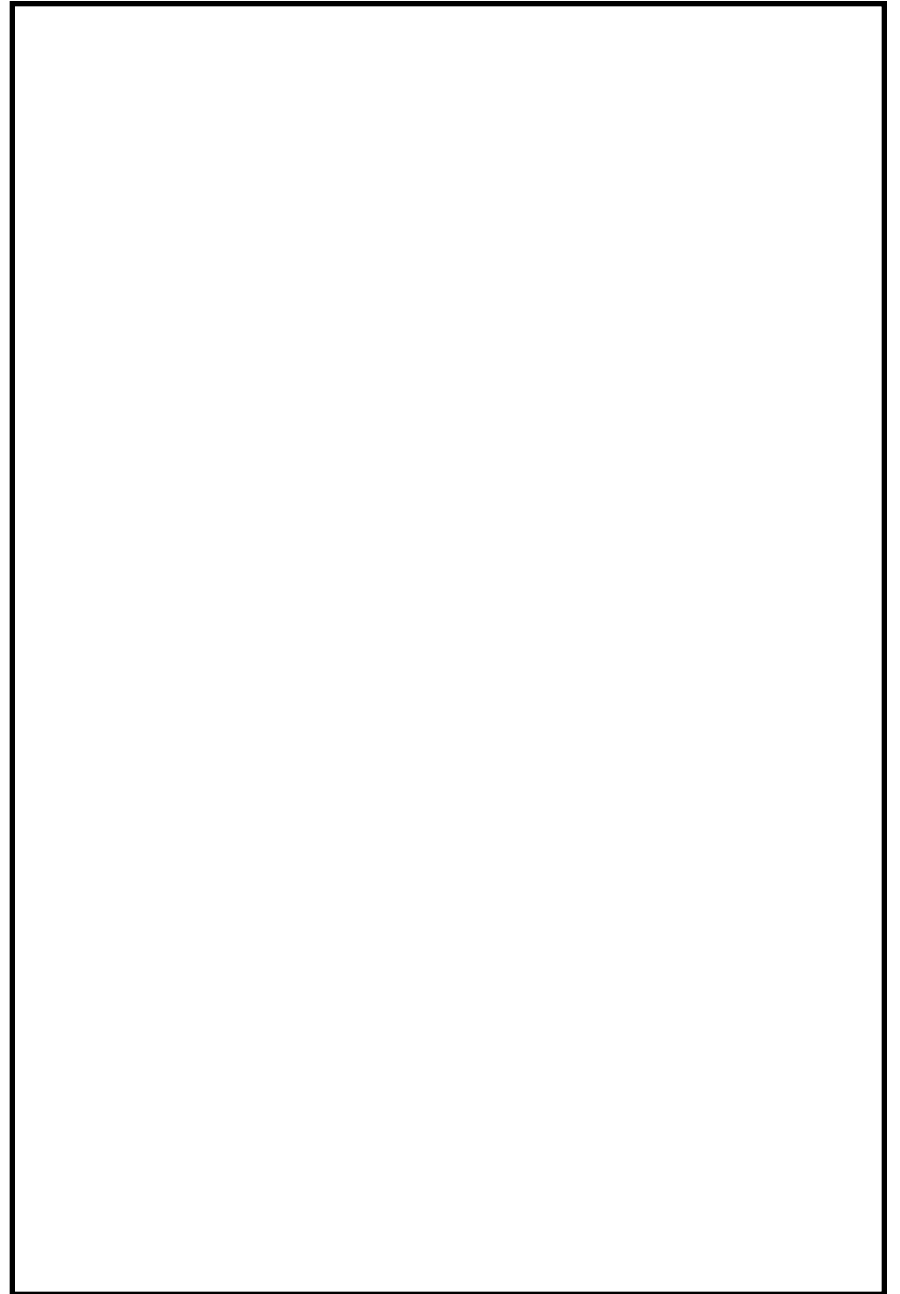
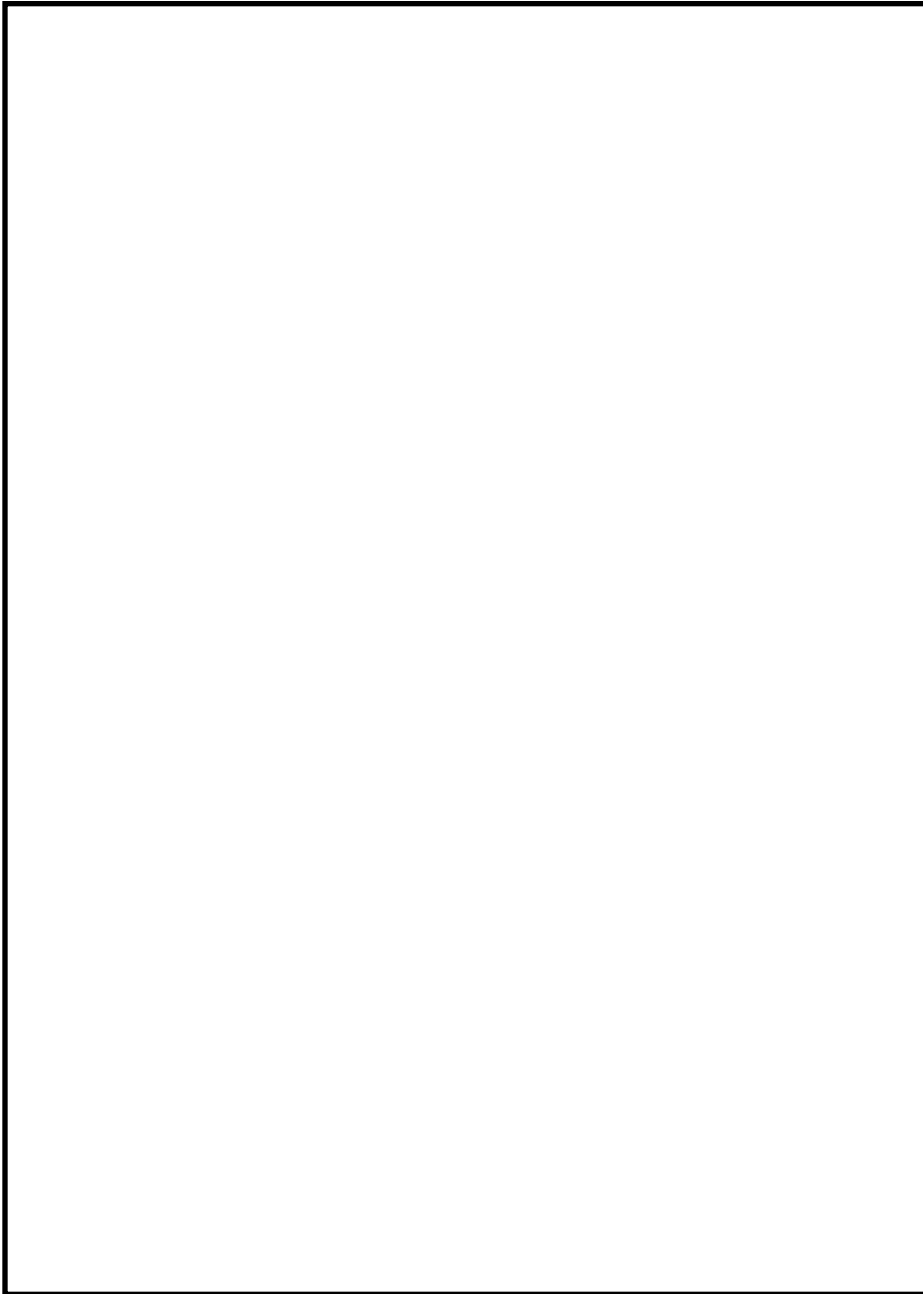
In this ten lesson unit students learn about how fossil fuels are acquired and used. Using activities, students are encouraged to develop and follow personal conservation plans.



ENERGY IN AMERICAN HISTORY, Grades 7-9, Social studies.

This unit helps students understand how energy has shaped American history. It consists of 15 lessons and requires about two weeks to complete. The content correlates well with lessons on the Industrial Revolution and 20th Century.





Energy Activities for the Primary Classroom

Check first with: PG&E, Educational Services
77 Beale Street, Room 2825
San Francisco, CA 94106-9900
(415) 973-9017 -or-
California Energy Extension Service
1400 Tenth Street
Sacramento, CA 95814
(916) 323-4388



This energy education program provides primary-level students with an understanding of energy, its various forms, its importance, energy conservation, and related careers. The collection comes with a list of concepts and indicates which activities best illustrate those concepts. (60 pages; free; 1985)

REPORT CARD

grades K-3

Teaching and LearningB

Disciplines:

Presentation and
OrganizationB-

Art
Language Arts
Science
Social Science

Energy Content B-

Teaching and Learning: There are no assessment devices, but varied learning modes are well addressed. The activities are suited to the primary classroom. A wide variety of topics are introduced. Integrated disciplines are used.

Presentation and Organization: Activities are readily integrated into an established curriculum. Further investigations or activity extensions are not provided.

Energy Content: The activities have students actively involved with energy conservation, but lack discussion of values or personal roles.

Teachers' Thoughts: Language arts are well integrated into these materials. Teachers felt this was a very functional source for a lot of great activities. Some feel it was a bit hard to read, while others really like the appearance.

The N.E.E.D. Project

P.O. Box 2518
Reston, VA 22091
(703) 860-5029



NEED's teaching materials are usually provided with an introductory workshop. The materials evaluated included: "Energy Exchange," a tri-annual publication that includes curriculum, background information and activities; "NEED Resources," with energy facts and free resources; "NEED Activities," a collection of games, plays, and other educational activities; "That's Energy Education," a drama with energy facts; and "Youth Awards Program," explaining the NEED contest rules/awards and includes an energy carnival kit. (185 pages; Membership varies by state; 1993.)

REPORT CARD

grades 3-12

Teaching and LearningB

Presentation and
OrganizationB-

Energy ContentB-

Disciplines:

Art
Interdisciplinary
Language Arts
Math
Science
Social Science
Science, Tech. & Society

Teaching and Learning: The activities provide for all learning modes and rate average on assessment devices and use of the scientific process. While societal issues are mentioned, personal ethics are not emphasized. Assessment devices are average.

Presentation and Organization: Organization of these materials is weak. There are some good illustrations, but the presentation is dull in places. The activities are adaptable to varied learning situations.

Energy Content: The different energy sources are covered very well; energy flow is not covered in depth.

Teachers' Thoughts: In general, teachers liked this creative collection of varied energy activities. Without an introductory workshop, the materials "are a jumble." Student appeal is a strong point: "Kids like this type of material and seem to learn from it."

California Challenge!

Earth Lab
Sonoma State University
1801 Cotati Avenue
Rohnert Park, CA 94928
(707) 664-2577



This is a board game that can be readily modified to work in just about any classroom. Students get very practical experience with listening, reading and learning. The questions are instructive and are related to all the disciplines. Game board set includes instructions, map, cards, \$20.00, additional maps \$3.00 each, additional sets of cards \$10.00 per set; also available in Spanish.

REPORT CARD

grades 4-6

Teaching and LearningB-	Disciplines:
	Language Arts
Presentation and	Math
OrganizationB	Science
	Social Studies
Energy ContentB-	

Teaching and Learning: There is a lot of content taught with this game. The game is readily adapted to varied classroom situations and different locations within California. The learning modes and environment are limited.

Presentation and Organization: “California Challenge” is simple to use and adaptable to individual classrooms. It can be reproduced for schoolwide use.

Energy Content: The only limitation noted is a lack of student involvement in actual energy conservation. A lot of history, math, and geography are included and related to energy information.

Teachers' Thoughts: There is a wonderful integration of science, social studies, geography and math. Designed for the 4th grade, some felt it would be a functional review through junior high. The map/board requires time to be made ready for play.

Energy Skill Builders

Check your local utility first -or-
Enterprise for Education, Inc.
1316 Third Street, #103
Santa Monica, CA 90401
(310) 394-9864



There are 17 different Skill Builders. Each is a lesson set which includes student booklets, a Teacher's Guide, and a reproducible quiz. Each title is listed here with grade level (they are ordered individually): The Atom and Radiation, grades 6-12, Climate and Comfort, grades 8-10, Coal: Once & Future King, grades 7-9, Demand for Electricity, grades 7-9, Efficiency of Electric Appliances, grades 6-9, Energy Transformations, grades 5-9, Geology of Oil, grades 6-12, Generating Electricity, grades 6-9, Greenhouse Effect and Global Warming, grades 6-11, Math Skill Builder, grades 6-8, Natural Gas, grades 6-12, Nuclear Fuel Cycle, grades 8-12, Nuclear Reactor, grades 8-12, Refining Oil, grades 8-12, Sources of Electricity, grades 5-9, Using Our Resources Wisely, grades 2-4, Working with Energy Graphs, grades 6-12, Is Efficiency the Best Source, grades 9-11, Electricity from Water, Wind, & Sun, grades 4-6 (8 or 16 pages; price varies with volume; 1987-91.)

REPORT CARD

grades 2-12

Teaching and LearningB

Presentation and
OrganizationB

Energy ContentC+

Disciplines:

Chemistry
Earth Science
Math
Physical Science
Science
Social Studies

Teaching and Learning: The activities are not unique but the information is organized thematically, grade-level appropriate and treated accurately. The inclusion of values was average.

Presentation and Organization: The organization and teacher instructions are good, but there are no extensions included.

Energy Content: Energy sources are explored, but the role of individuals and society in energy issues is weak.

Teachers' Thoughts: Each of these short attractive pamphlets has a narrow focus. While there are not a lot of hands-on activities, teachers felt the discussion materials would promote critical thinking.

4-H Home Conservation Guide

Check first with: PG&E, Educational Services
77 Beal Street, Room 2825
San Francisco, CA 94106-9900
(415) 973-9017 -or-
California Energy Extension Service
1400 Tenth St., Rm 209
Sacramento, CA 05814
(916) 323-4388



This is a collection of 12 activities taken from other sources and compiled by the El Dorado County Office of Education. Its objectives are to provide 4-H members with reasons for conserving energy at home, to help teach weatherization concepts, and to provide instructions for hands-on projects. There are lots of illustrations to help guide the lessons. (32 pages; free; 1988.)

REPORT CARD

grades 4-12

Teaching and LearningB

Disciplines:

Presentation and
OrganizationB

Language Arts
Math
Science

Energy ContentC+

Teaching and Learning: There is a very strong connection between energy and day-to-day living. The activities are all hands-on. No assessment devices are provided. These teaching materials are useful in both urban and rural environments.

Presentation and Organization: There is no natural progression within the organization. Materials for students are amply provided and the objectives for the activities are clear.

Energy Content: The activities get students actively involved in energy conservation. The role of individuals, families and government in energy policy is explored. Various forms of energy and energy flow are not directly discussed.

Teachers' Thoughts: This is a "hodgepodge" of very "student do-able" activities. There is a non-academic approach and it does not discuss energy in depth. Teachers felt the materials were limited but loved the simple organization and the practical nature of the activities.

Top Hit Energy Lesson Plans

National Energy Foundation
5225 Wiley Post Way, Suite 170
Salt Lake City, UT 84116
(801) 539-1406



There are six of these multidisciplinary activity guides for use in the classroom. There are separate guides for grade levels K-1, 2, 3, 4, 5, and 6. All are evaluated together here due to space limitations. (20-27 pages; \$5 each; 1986.)

REPORT CARD

grades K-1, 2, 3, 4, 5, 6

Teaching and LearningB-

Presentation and
OrganizationB

Energy ContentC+

Disciplines:

Language Arts

Math

Science

Social Studies

Art

Music

Teaching and Learning: Lessons are related to students' lives and use different learning modes but the concepts are not always open to inquiry and assessment devices are weak.

Presentation and Organization: Instructions are clear and objectives easily discerned but the activities don't always follow a natural progression. Some activities are not grade level appropriate.

Energy Content: Discussion and comparison of renewable and nonrenewable energy is only fair. The activities do include student participation in energy conservation.

Teachers' Thoughts: Teachers liked having the activities broken down for specific grade levels and felt the format was very straight forward and easy to use. The content seemed a bit shallow or limited to some but most teachers feel these would be good supplemental materials.